Shigellosis

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To determine if there is a source of infection of public health concern (e.g., a food handler or child care facility) and to stop transmission from such a source.
2. When the source of infection appears to pose a risk to only a few individuals (e.g., a private water supply), to inform those individuals how they can reduce their risk of exposure.
3. To assess the risk of the case transmitting infection to others, and to prevent such transmission.
4. To identify outbreaks and other undiagnosed cases.

B. Legal Reporting Requirements

1. Health care providers: **immediately notifiable to local health jurisdiction.**
2. Hospitals: **immediately notifiable to local health jurisdiction**.
3. Laboratories: notifiable to local health jurisdiction within 2 work days; specimen submission required.
4. Local health jurisdiction: notifiable to the Washington State Department of Health (DOH) Communicable Disease Epidemiology Section (CDES) within 7 days of case investigation completion or summary information required within 21 days.

C. Local Health Jurisdiction Investigation Responsibilities

1. Begin investigation within one work day.
2. Administer appropriate infection control recommendations (see Section 6A).
3. Report all confirmed and probable cases to CDES. Complete the shigellosis case report form (www.doh.wa.gov/notify/forms/shig.doc) and enter the data into the Public Health Issues Management System (PHIMS).
4. Ensure that labs forward the first isolate from each patient to the Public Health Laboratories (PHL) for speciation.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Shigella are aerobic, gram-negative bacteria in the family Enterobacteriaceae. There are four *Shigella* species: *S. sonnei* (Group D), *S. flexneri* (Group B), *S. dysenteriae* (group A), and *S. boydii* (Group C). *S. sonnei* is the most common type reported in Washington. *S. flexneri* is seen primarily in persons who have come from or traveled to developing countries; or who have had contact with such individuals. *S. dysenteriae* and *S. boydii* infections are rare in Washington.

B. Description of Illness

Shigellosis is characterized by acute onset of diarrhea, usually accompanied by moderate to high fever and cramping abdominal pain; sometimes with nausea and vomiting. Illness is self-limited, usually lasting 3–10 days. Asymptomatic carriage lasting weeks or months may occur, although less often than with salmonellosis. Diarrhea is often marked by blood, mucus, or pus in the stools. Infections can be severe, particularly in young children and the elderly. Mild and asymptomatic infections also occur.

C. Shigellosis in Washington State

DOH has received between 130 and 250 reports of shigellosis per year in recent years, with no deaths reported.

D. Reservoirs

Infected humans are the reservoir, with rare infections of non-human primates.

E. Modes of Transmission

Transmission is fecal-oral with a very small infectious dose; as few as 10–100 organisms may be sufficient. Commonly recognized vehicles or mechanisms include:

1. Person-to-person transmission within households and child care facilities or to other close contacts whenever hand washing after defecation is inadequate. Care givers are also at risk of infection due to fecal contamination of hands.
2. Sexual contact, including oral-anal contact.
3. Fecally contaminated inanimate objects (fomites).
4. Food that is contaminated during harvest, transportation, preparation, or most commonly, serving, particularly food served without cooking (e.g., lettuce, cold sandwiches).
5. Contaminated and inadequately treated drinking water.
6. Ingestion of contaminated and untreated recreational water.
7. While there are no natural animal reservoirs, some non-human primates can be infected and could become exposure sources for animal handlers or exotic pet owners.

F. Incubation Period

1–4 days, rarely as short as 12 hours or as long as 7 days.

G. Period of Communicability

Patients are communicable as long as organisms are excreted in feces, typically about 1–4 weeks after onset. Some individuals may remain carriers for several months. The period of excretion is usually shortened by appropriate antibiotic therapy.

H. Treatment

Fluid and electrolyte replacement (oral or IV) is the mainstay of treatment for patients with shigellosis. Antibiotics to which the isolated strain is susceptible will shorten the duration of illness and period of communicability. Treatment should be based on susceptibility results. High levels of resistance to ampicillin and

trimethoprim/sulfamethoxazole (TMP/SMX) have been found. Anti-motility agents are contraindicated, as they may prolong the illness.

3. CASE DEFINITIONS

A. Clinical Criteria for Diagnosis

An illness of variable severity characterized by diarrhea, fever, nausea, cramps, and tenesmus. Asymptomatic infections may occur.

B. Laboratory Criteria for Diagnosis

Isolation of *Shigella* from a clinical specimen.

C. Case Definition (2005)

1. **Probable:** a clinically compatible case that is epidemiologically linked to a confirmed case.
2. **Confirmed:** a case that is laboratory confirmed.

Note: Both asymptomatic infections and infections at sites other than the gastrointestinal tract, if laboratory confirmed, are considered confirmed cases that should be reported.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

The diagnosis is made by identification of *Shigella* in a clinical specimen, usually stool.

B. Tests Available at DOH Public Health Laboratories (PHL)

Laboratories in Washington are required to submit *Shigella* isolates to PHL. PHL performs speciation, serotyping, and pulsed-field gel electrophoresis (PFGE) on all submitted isolates. Isolates with the same PFGE pattern may be consistent with but do not prove a common source, whereas isolates with different PFGE patterns presumptively came from different sources.

In an outbreak or other special situation, PHL can culture stool for *Shigella* species. Contact CDES for approval prior to submitting stool for culture.

D. Specimen Collection

For stool culture, use a sterile applicator swab to collect stool, insert the swab into Cary-Blair transport medium, push the cap on tightly, label the tube, and mail immediately.

Please enclose a completed PHL Enteric Bacteriology form (available at: http://www.doh.wa.gov/EHSPHL/PHL/Forms/EntericBacteriology.pdf) with all isolates and stool specimens.

Instructions for handling food specimens can be found in the PHL Directory of Services: http://www.doh.wa.gov/EHSPHL/PHL/Forms/directory_of_services.pdf.

5. ROUTINE CASE INVESTIGATION

Interview the case and/or others who may be able to provide pertinent information.

A. Identify Source of Infection

Ask about possible exposures 1–7 days before onset of symptoms, including:

1. Contacts or household members with a similar illness. Obtain the name, phone number or address, and clinical information of the ill person. Anyone meeting the probable case definition should be reported and investigated in the same manner as a confirmed case.
2. Attendance or employment at a child care facility by the case or a household member of the case. (If the case or a household member attends or works at a child care facility, see Section 7: Managing Special Situations).
3. Restaurant meals. Obtain the name of the restaurant, and date and location of the meal.
4. Public gathering where food was consumed. Obtain the date, location, and sponsor of the event.
5. Recreational water exposure. This includes swimming, playing, or other exposure to lakes, streams, swimming pools, water parks or wading pools where water may have been swallowed.
6. Source(s) of drinking water as well as water from streams or lakes (either consumed purposefully or accidentally during work or sports activity). Water used only after boiling need not be included. If a public water supply is implicated, consult CDES.
7. Travel outside Washington or the United States, or contact with others who have traveled outside the United States. Determine dates of travel.
8. Sexual contact involving potential fecal exposure.

B. Identify Contacts who Work in Sensitive Occupations

Determine if any household member or close contact attends or works at a child care facility; or works as a food handler or health care worker. If so, see Sections 6 and 7.

C. Environmental Evaluation

A sanitary inspection is indicated if a commercial food service facility, child care center, or public drinking water supply appears to be implicated as the source of infection.

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations

1. Hospitalized patients should be treated using standard precautions. Contact precautions should be used for diapered or incontinent persons for the duration of the illness or to control institutional outbreaks.
2. The case should be educated regarding effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food. Meticulous hand washing is required to prevent transmission.
3. School Restrictions: Children should not attend school as long as they have diarrhea.
4. Work or Child Care Restrictions: Persons should not work as food handlers, child care or health care workers, or attend child care as long as they have diarrhea. The Washington State Retail Food Code requires food employees to report *Shigella* infections to their

employer and requires food establishments to restrict from areas where unwrapped food or beverages are prepared and sold (if serving general populations) or exclude from the establishment (if serving highly susceptible populations) employees known to be infected with *Shigella* until approved to be released by the local health authority (WAC 246-215-251) (5).

In general, food handlers, child care workers, healthcare workers, and child care attendees with shigellosis require two negative stool specimens before returning to work or child care. The stool specimens should be collected 24 hours apart and not sooner than 48 hours after the last dose of antibiotics, if antibiotics were given. Restrictions can be waived or modified at the discretion of the local health jurisdiction. Individuals may continue to be infectious for several weeks, however, and should be cautioned accordingly.

5. If a suspected source of infection is identified and has the potential for transmitting infection to a defined population, advise those individuals on measures to avoid exposure (e.g., boil water or drink bottled water until private well is decontaminated).

B. Case Management

Stool cultures to document that fecal shedding of the organism has stopped are not routinely indicated, except for the purpose of lifting work and child care restrictions (see above).

C. Contact Management

1. Symptomatic contacts: Symptomatic household members and other close contacts should seek medical attention from their regular providers as needed. Contacts with recent or current symptoms are probable cases, and should be managed and reported as such on separate forms. Cultures are indicated if a symptomatic contact appears to be part of a common source outbreak, or is a food handler, healthcare worker, child care worker, or child care attendee.
2. Asymptomatic contacts: Cultures should be considered if an asymptomatic household member or other close contact works as a food handler, healthcare worker, child care worker, or attends child care.
3. Education: Contacts should be educated about transmission routes, symptoms and effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food.

D. Environmental Measures

See Section 7 for environmental measures in special situations.

7. MANAGING SPECIAL SITUATIONS

A. Possible Foodborne or Waterborne Outbreaks

Shigella is a frequent cause of foodborne disease. Call CDES immediately if you suspect a common-source outbreak.

B. Case Attends or Works at a Child Care Facility

1. Interview the operator and inspect attendance records to identify other possible cases

among staff or attendees during the previous month.

2. Review food handling, hand washing, and diaper changing practices with the operator and staff.
3. Collect stool specimens for culture from all staff members and children who are currently symptomatic or who have had a diarrheal illness consistent with shigellosis during the recent past.
4. Exclude cases (including those who are asymptomatic) from child care facilities until they have two negative stool cultures collected at least 24 hours apart and 48 hours after discontinuation of antibiotics.
5. If more than one case or suspected case is identified among attendees or workers at a child care facility, inspect the facility.
6. Instruct the operator to notify the LHJ immediately if new cases of diarrhea occur.
7. Make follow-up contact with the child care center to assure that surveillance and appropriate preventive measures are being carried out. Manage newly symptomatic children as outlined above.

C. Case Resides at a Health Care or Residential Care Facility

Determine if there has been any unusual incidence of diarrheal illness within the past month. If so, investigate these reports to identify possible common-source outbreaks or any continuing sources of exposure. If indicated, conduct a sanitary inspection of the facility. The extent of further investigation depends on circumstances.

8. ROUTINE PREVENTION

A. Vaccine Recommendations: None

B. Prevention Recommendations

1. Stress proper hand hygiene, including attention to fingernails.
2. Emphasize hand washing after diapering and proper diaper disposal in households and child care centers.
3. Promote frequent and supervised hand washing among incompletely toilet trained children.
4. Provide adequate soap and individual towels in institutional or public settings.
5. Prevent fecal contamination of food and water.
6. Reduce crowding in institutional settings.
7. Avoid fecal exposure during sexual contact.
8. Persons with shigellosis should not use recreational water venues (e.g., pools, lakes, interactive fountains, water parks) until 2 weeks after symptoms resolve.
9. Provide adequate toilet facilities at communal swimming or wading locations.
10. When traveling, drink only treated or boiled water and eat only cooked hot foods or fruits you peel yourself.

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UPDATES